DOCUMENT RESUME

ED 123 225 SP 010 131

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TITLE Locus of Control and Other Psycho-Social Parameters in Successful American Age-Group Swimmers.
PUB DATE Jul 76
NOTE 16p.; Paper presented at the International Congress of Physical Activity Sciences (Quebec City, Quebec, Canada, July 1976)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS Athletes; Athletics; Females; Lifetime Sports; *Locus of Control; Males; *Psychological Characteristics; Recreational Activities; Research; *Social Factors; *Swimming; *Youth

ABSTRACT

Psycho-social factors in successful age-group swimmers were explored in this study. The subjects were 50 female and 39 male participants in the 1975 Amateur Athletic Union National Junior Olympics who were asked to answer a set of questions from an open-ended questionnaire. The results support a picture of young persons who invest a great deal of their being in swimming. The subjects began to train around nine years of age and spend about four hours each day, six days each week, for about ten and one-half months of the year swimming. The results also offer evidence that powerful intrinsic factors motivate the swimmers, such as friendships, self-satisfaction, fun, and the joy of the water. The subjects placed great emphasis on the importance of psychological preparation and tended to believe that rewards they obtain are largely due to their own efforts rather than external factors. (Tables are included.) (RC)

# LOCUS OF CONTROL AND OTHER PSYCHO-SOCIAL PARAMETERS IN SUCCESSFUL AMERICAN AGE-GROUP SWIMMERS

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A Paper Delivered at the

International Congress of Physical Activity Sciences

Quebec City, Quebec

July, 1976

## INTRODUCTION

Few individuals outside the American (U.S.A.) swimming subculture are aware of the magnitude of involvement by children. There are nearly one million boys and girls presently participating in age-group swimming programs. These programs are usually run by a private club; but some are run in conjunction with Y's, boys' clubs and schools. The general plan has been to promote training and consequent competition according to chronological age classifications. Under the guidance of the Amateur Athletic Union, the goal of the program has been to develop top class senior and collegiate swimmers.

Considering the magnitude of age-group swimming in the U.S.A., there has been a surprising lack of scientific exploration of the phenomenon. Commenting on lack of research in the area of age-group programs in all sports, Sage (1974) has stated:

> Any discussion of this topic invariably depresses me because there is such a lack of empirical work on which to base an argument for or against these programs. . . . The physicians and physiologists have the most documentation and it deals with the physiological aspects of participation, but it is pitifully limited. Psychologists have almost nothing, except their professional hunches . . .

Young (1975) has commented that some age-group coaches and parents are pushing their children away from the sport. He feels that much of the problem is a mental rather than physical "burnout." Counsilman (1974) has proposed a two-factor stress theory of age group swimming programs. Physiological stress is involved with the long hours of training, approaching 20,000 meters per day in some programs while psychological stress comes in part from parents and coaches. He states: "most of the harm that comes from age-group swimming, is psychological stress."

The purpose of this paper was to explore psycho-social factors in successful age-group swimmers with the goal:

1. To establish baselines for future research.
2. To make possible implications for the coach.

## METHODS

Subjects for the present study were 50 female and 39 male participants in the 1975 AAU National Junior Olympics, held in Ithaca, New York, August, 1975. All subjects had met certain criterion times in order to be eligible for the meet. The swimmers represented a cross-national sample from fourteen states of the USA with California having the greatest representation. A restriction on participation in the event was that no swimmer could have participated in a national AAU swim meet and thus the subjects cannot be considered world class swimmers. However, based on previous times in their respective events, three males and three females in the study had achieved times which were among the top five in the U.S.A. for their age-class.

Following the failure to involve individual coaches in the administration of the test, most of the subjects were approached during free time periods throughout the three-day meet. Subjects were asked to "answer a set of questions that would take about one-half to three-quarters of an hour." Test administrators experienced only about five refusals. The open-ended questionnaire was similar to one used in an earlier study of young national class female runners (Burke, Straub, Bonney, 1975). Locus of control was measured with the test by Nowicki and Strickland (1973).

## RESULTS AND DISCUSSION

The results support a picture of a young person who invests a great deal of their being in swimming. As seen in Table 1, the subjects begin to train around

the age of nine. Thus, the boys have been in training for about seven years and the girls for about six years. Both boys and girls swim about four hours each day, six days each week, for about ten and one-half months out of the year. They reported that education is one of the most important things in their lives (Table 3). This attitude was supported by their average grades in school. Concerning their peer group affiliations, females and males, respectively, reported approximately 56.55 and 56.95 per cent of the individuals with whom they most often associate are swimmers; 24.43 and 31.00 per cent are athletes; 19.04 and 11.97 are non-athletes. Kandel and Lesser (1969) have found that a reference group of peers come to be the most potent source of influence on adolescents' decisions. Based on data obtained from fifteen top British age-group swimmers who trained approximately thirteen hours weekly, Hendry and Whiting (1969) found a picture of

> . . . excessive involvement in a subculture of competitive sport such that a majority of the time and interest is devoted to physical achievement and personal attainment, leaving little time for other adolescent interests.

Fifty-nine per cent of the boys (primary parent: 7 mothers, 7 fathers and 9 both parents) and 54 per cent of the girls (primary parent: 9 mothers, 3 fathers and 15 both parents) report the influence of parents in their decisions to train for swimming. This is in marked contrast to a group of young female distance runners where only one set of parents had a role in the decision to train (Burke, Straub, Bonney, 1975). The greater favorable publicity accorded swimmers with the consequent greater potential for vicarious involvement by the parent is clearly a possible reason for the differences.

Tables 2 and 3 may provide some insight into the motivation of these young athletes. All subjects were members of a club or formal team. In response to why they joined the team the most frequent responses from both boys and girls were (1) the coaching, (2) the locality or convenience of the pool and (3) the people involved with the program. The interaction of the coach and personal dreams was reflected by

the response of a fourteen year old girl as follows:

> Ever since I was little I wanted to swim in competition. I have had this dream to go into the olympics and this is my goal! My coach seemed and is really devoted so I thought I should be as devoted.

A fifteen year old girl stated: "I loved the water and wanted to be an athlete," while a fifteen year old boy said, "I wanted to see how good I could get in swimming." A thirteen year old girl said, "I started with kindergarten, it seemed like fun."

As to why these athletes have stayed with their club or team, once again, the responses from boys and girls were similar as follows: (1) the coaching, (2) teammates and friends, (3) the positive feeling of improvement, and (4) fun or enjoyment. A fifteen year old girl responded, "a goal (olympic gold) that drives me on." The ambivalence of a fourteen year old girl was demonstrated by the remark, "Habit, I think I enjoy it." The response of a sixteen year old boy apparently reflects the attitudes of many of the swimmers: "My club offers me substantial workouts, friendships and coaching needed to be a good swimmer." The remarks of two seventeen year old boys reflect the sense of a self-satisfaction expressed by many: "Because I did good in it and I meet people and have a good time" and "I was getting better every year in the sport, so I continued."

The most frequent responses concerning what the athletes liked best about swimming dealt with: (1) the competition, (2) the people, (3) the self-satisfaction, and (4) the travel. A fourteen year old girl summarized the thoughts of many when she stated:

> The coach, how the kids enjoy swimming. I love swimming because of the many things you learn and gain from the sport. It is a very disciplined sport. It makes me feel great every time I hit the water.

The independences of these athletes was reflected in the response by a seventeen year old boy and an eighteen year old girl, respectively: "You alone can do the

job, nobody can be blamed but yourself" and "rewards you set, satisfaction of bettering yourself." The importance of socialization in age-group swimming was demonstrated by the comments of a fourteen year old girl: "Its fun, you meet new people, you travel and see different places and you experience new things that you aren't able to experience in another sport" and by a fifteen year old girl: "meeting all the different people and having all the fun and excitement and achievement."

Sage (1973) has expressed the opinion that "motivational emphasis in most kids' sports programs is almost always extrinsic rather than intrinsic." The results offer evidence that there are indeed powerful intrinsic factors which could be used by the effective coach. The friendships, self-satisfaction, the fun, the joy of the water are all factors which could be utilized by the coach in an effort to reduce the harmful effects of psychological stress. Rushall (1970) has recommended that the environment around the age-group swimming program be structured so as to provide positive reinforcement. The coach should be able to individualize the program in such a way that the child looks forward to practice. In a similar theme, Young (1975) has warned that young swimmers should be allowed to act like children. The success of one coaching staff in effectively dealing with a twelve year old female swimmer who ranks in the top five in the county in her event was reflected as she expressed what she liked best about swimming: "We have different workouts and our coaches make up funny jokes and stories."

## "PSYCHOLOGICAL" ATTITUDES

The psychological preparation of athletes has become of major importance during the past ten years. More and more coaches have come to realize that a well-conditioned body is of little value unless the athlete is motivated to excel in his/her particular sport. The objective of course is to produce athletes who are highly skilled, well-conditioned, and optimally motivated.

Not only have coaches begun to realize the importance of the psychological factors which affect athletes as they participate in sports but the athletes themselves know that they must be highly motivated if they are to perform at high levels of competition. How one thinks often influences how one plays! The young male and female athletes who were the subjects of this study placed great empahsis on the importance of psychological preparation as evidenced from their responses to the following questions:

How important is your psychological state of mind in preparation for an important?

In a rather surprising show of unanimity, every swimmer's response showed a perceived importance for the "psychological state of mind" prior to a "big meet." Most responded with the words "very important" while others used phrases such as "99.9%," "most important," "90% mind and 10% physical," "most of it is psychological," or "almost as important as training." One sixteen year old male said, "the way you feel determines how well you can put out to swim," while a seventeen year old male expressed the comment that "peak performance depends on mental attitude and ability to be within myself." The opinions of females were essentially the same as males. A sixteen year old female ssid "It is very important. I have to really be psyched up--but not out!" A fourteen year old female who is in the top five in the country in her class expressed the opinion: "Pretty much all of it. I usually am ready for anything physically. But, if I don't know I'll do it, I might do O.K., but not good."

Do you find that your general behavior is altered in the time period around a big meet? For how long? In what ways?

Three boys (8 per cent) and 10 girls (20 per cent) responded "no" to the initial question. Considerable differences were expressed about the time period. They ranged from 15-30 minutes to two weeks. The median and modal response was one

week in both boys (10) and girls (7). The most common responses to the last question for the boys were "serious" (4) and "sleep more" (4), while for the girls it was "quiet" (6) and "serious" (4).

Other responses for the boys were "snotty," "temperamental," "anti-social," "frustrated," "nervous," "roudier," "more jumpy," "acting stupid," "hyperactive," "uncomfortable" and "exciteable." Other responses for the girls were "nervous," "frustrated," "irritable," "moody," "sleep more," "acting roudy" and "worry about food."

In referring to wrestling in particular, Kroll (1972) has noted that coaches have an almost mystical belief in the value of motivation and in the "psyching up" of athletes for successful performance. McCafferty (1973) has observed that in some sports, coaches do more psyching-out than psyching-up. Along these same lines, Langer (1966) has hypothesized that pre-competition psych-up talks probably do not affect the anxiety of the good athlete but may adversely affect the poor athlete. The evidence from the present study suggests that almost all of the athletes perceive some form of heightened state of anxiety as competition nears. Additional pressure from parents and coaches may make the pressure too difficult to bear. Porter (1972) found that pressure from coaches, parents and failure to perform the expectation were reasons most often cited by age-group swimmers who discontinued training.

## LOCUS OF CONTROL

Locus of Control (I-E), or the way in which individuals perceive the reinforcements which they receive, has become a central concept in psychology since Rotter (1966) published his classical paper in 1966. Since that time, more than 600 articles have been published and many theses and dissertations have been written (Phares, 1976). Few studies, however, have been conducted in which athletes have served as subjects.

Internal-external control of reinforcement is an important concept in Rotter's Social Levining theory of Personality. Although it is an important determinant of behaviour, I-E is not the only variable which influences the way in which individuals behave. Internals believe that the rewards they obtain are due largely to their own efforts. Externals, on the other hand, feel that the reinforcements they get are due largely to factors outside themselves, i.e., to luck, chance or powerful others. Locus of control may be conceptualized as existing on a continuum with externality at one end of the scale and internality at the other. As expected, most people fall somewhere in between the two extremes. Research shows, however, that I-E is related to social class, ability to delay gratification, ethnicity and various environmental and cultural factors (Crandall, Katkovsky, Preston, 1965; Parsons, Schneider, Hansen, 1970; Schneider, Parsons, 1970; Strickland, 1973); Zythkoskee, Strickland, Watson, 1971).

A review of the means and standard deviations and t-tests in Tables 4 and 5 support the generalization that these young swimmers are internal in their perceptions of reinforcement. That is to say, they seem to be integrated individuals who believe that they are capable of shaping their own destiny. These results are in support of a recent study of young female distance runners (Burke, Straub, Bonney, 1975) who were high in internality, independent and possessed superior academic achievement.

A multi-factor analysis of variance 2 x 2 x 2 design was used to test presence of possible differences in the sexes, by age and by event. The only significant F-ratio ($p < .05$) in locus of control was between sprinters and distance swimmers may endure greater pain over longer periods of time thus resulting in greater delays in gratification.

Significant differences were not found for sex and age variables. Phares (1976) reports that a wide majority of studies do not find significant differences in I-E scores beween men and women. The present study was unable to support earlier studies which have found an increased internality with advancing age in children (Phares, 1976). To the extent that I-E may be influenced by environmental factors it is possible that this finding may be explained by the early years of training which may result in an enduring belief that indeed an individual has the ability to shape his or her destiny.

## CLOSING THOUGHTS

In interpreting these data, the reader should remember that these are "successful" age-group swimmers. Most of these athletes had flown thousands of miles to participate in this event and probably represented the elite few from their club or team. Relative to I-E scores it must be pointed out that these data are cross-sectional in nature and no implications can be drawn relative to cause and effect. Furthermore, no attempt was made to control for socio-economic class, academic achievement or the influence of parents, all critical antecedent variables in I-E. This study may be viewed only as a beginning in the analysis of a complex phenomenon.

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Table 1. Means and Standard Deviations for Selected Variables in Successful Age-group Swimmers.

| | Males (N=39) | | Females (N=50) | |
|---|---|---|---|---|
| | $\bar{X}$ | SD | $\bar{X}$ | SD |
| Age | 16.73 | 1.30 | 15.10 | 1.16 |
| Age when formal training began | 9.15 | 2.36 | 9.21 | 2.49 |
| Hours routinely trained per day | 4.04 | 1.03 | 3.98 | .68 |
| Days routinely trained per week | 5.96 | .64 | 5.96 | .63 |
| Months routinely trained per year | 10.49 | 1.05 | 10.72 | .74 |
| Approximate average in school (A=90-100; B=80-90; C=70-80; D=60-70) | 88.08 | 7.06 | 88.91 | 6.05 |
| Of individuals you associate with most often, approximately what percentage share your interest in swimming | 56.95 | 28.31 | 56.55 | 26.45 |
| Of individuals you associate with most often, approximately what percentage share your interest in a sport other than swimming | 31.08 | 26.50 | 24.43 | 25.40 |
| Of individuals you associate with most often, approximately what percentage do not regularly participate in a sport | 11.97 | 11.95 | 19.04 | 10.53 |
| Nowicki-Strickland test of I-E | 8.26 | 3.54 | 10.15 | 3.95 |

Table 2. Factors Chosen by Successful Age-group Swimmers in Selection of and Continuation on Their Club or Team.

Please list the factors which influenced your decision to join your club or team.

| Males | | | Females | | |
|---|---|---|---|---|---|
| Response | Frequency | Percent | Response | Frequency | Percent |
| Coaching | 16 | 41 | Coaching | 19 | 38 |
| "People" "Teammate" "Friend" | 9 | 23 | "People" "Teammate" "Friend" | 15 | 30 |
| Locality | 9 | 23 | Locality | 10 | 20 |
| "To be good at something" ("to be an athlete") | 4 | 10 | Parents | 5 | 10 |
| Parents | 4 | 10 | Enjoyment | 3 | 6 |
| "Nothing else to do" "Pass the time" | 4 | 10 | Competition | 3 | 6 |

Please list the factors which have caused you to continue on your club or team.

| | | | | | |
|---|---|---|---|---|---|
| Coaching | 16 | 41 | "Friends" "Teammate" | 16 | 32 |
| Teammates (friends) | 16 | 41 | "Enjoyment" "fun" | 13 | 26 |
| "I improved a lot" | 12 | 31 | Coaching | 13 | 26 |
| "I have fun" | 7 | 18 | "Success" "improvement" | 10 | 20 |
| Facilities | 5 | 13 | "In shape" or "health" | 3 | 6 |
| "I love to compete" | 3 | 8 | Location | 3 | 6 |
| Travel | 2 | 5 | Travel | 2 | 4 |
| Scholarship possibilities | 2 | 5 | Competition | 2 | 4 |
| | | | Scholarships | 2 | 4 |

Table 3. Sources of Motivation in Successful Age-group Swimmers.

What do you like best about your sport?

| Males | | | Females | | |
|---|---|---|---|---|---|
| Response | Frequency | Percent | Response | Frequency | Percent |
| "Competition" ("meets") | 13 | 33 | "Competition" ("meets") | 21 | 42 |
| "People" | 10 | 26 | "Travel" | 10 | 20 |
| "Self-satisfaction" | 8 | 21 | "Self-satisfaction" | 9 | 18 |
| "Travel" | 7 | 18 | "People" | 9 | 18 |
| "Fun" | 4 | 10 | "Fun" | 4 | 8 |
| "Physical Fitness" | 2 | 5 | "Health" | 3 | 6 |
| "Individuality" | 1 | 3 | "Coach" | 3 | 6 |
| "Girls" | 1 | 3 | "Relaxing" | 2 | 4 |
| "Coach" | 2 | 3 | | | |

Make a list of the most important things in your life.

| | | | | | |
|---|---|---|---|---|---|
| Swimming | 27 | 69 | Swimming | 33 | 66 |
| Education | 26 | 67 | Family | 22 | 44 |
| Girls ("sex") | 11 | 28 | Education | 20 | 40 |
| Family | 9 | 21 | Friends | 16 | 32 |
| Friends | 6 | 15 | Boys | 7 | 14 |
| Eating | 4 | 10 | Eating | 5 | 10 |
| Sleeping | 3 | 8 | Religion | 5 | 10 |
| Patriotism | 3 | 8 | Pets | 5 | 10 |
| Fun | 3 | 8 | Health | 2 | 4 |
| Success | 3 | 8 | Future | 2 | 4 |
| Religion | 1 | 3 | Happiness | 1 | 2 |
| Money | 1 | 3 | Money | 1 | 2 |
| TV | 1 | 3 | Music | 1 | 2 |
| | | | Olympics | 1 | 2 |

Table 4. I-E Means and Standard Deviations by Sex, Age and Types of Event

| Males | | | | | | | | Females | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Age Less than 16 | | | | Age 16 or Greater | | | | Age Less than 16 | | | | Age 16 or Greater | | | |
| Distance | | Sprinter (200 yds. or less) | | Distance | | Sprinter (200 yds. or less) | | Distance | | (200 yds. or less) | | Distance | | (200 yds. or less) | |
| $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD |
| 5.33 | 3.79 | 10.40 | 2.70 | 7.13 | 3.31 | 8.58 | 3.50 | 9.57 | 3.41 | 11.19 | 4.14 | 6.75 | 3.59 | 9.17 | 3.24 |

Table 5. I-E Means and Standard Deviations by Grade Level.

| | Males | | | | Females | | | |
|---|---|---|---|---|---|---|---|---|
| | Swimmers | | Norms* | | Swimmers | | Norms* | |
| Grade in School | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD |
| 7th | --- | --- | 13.15 | 4.87 | 7.71[a] (7) | 3.40 | 13.94[a] | 4.23 |
| 8th | --- | --- | 14.73 | 4.35 | 12.30 (10) | 4.00 | 12.29 | 3.58 |
| 9th | 10.00[a] (4) | 2.94 | 13.81[a] | 4.06 | 11.88 (8) | 3.80 | 12.25 | 3.75 |
| 10th | 7.36[a] (11) | 2.91 | 13.05[a] | 5.34 | 8.91[a] (11) | 3.53 | 12.98[a] | 5.31 |
| 11th | 9.20[a] (10) | 4.18 | 12.48[a] | 4.81 | 6.00[a] (3) | 1.00 | 12.01[a] | 5.15 |
| 12th | 7.92[a] (12) | 3.63 | 11.38[a] | 4.74 | 10.33 (6) | 3.14 | 12.37 | 5.05 |

*Nowicki, Strickland, 1973.

a = $p < .05$ between swimmers and norms.